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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,154	12/23/2005	Snjezana Boger	016906-0459	6580
22428 7590 10/23/2008 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
SHEVIN, MARK L				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
10/23/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/562,154

Applicant(s)

BOGER ET AL.

Examiner

Mark L. Shevin

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-38 is/are pending in the application.
- 4a) Of the above claim(s) 7-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1, 4-6, 15-38 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Status:

1. Claims 1 and 4-38, filed July 16th, 2008, are pending. Compared to the claims filed December 23rd, 2005 and examined in the previous Office Action mailed April 17th, 2008:

Amended: Claims 1 and 4-5

Withdrawn: Claims 7-14

Cancelled: Claims 2-3

New: Claims 15-38

Telephonic Election

2. No telephone call was made in this case given the 371 status of the case with foreign Applicants.

Election of Species

3. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows (along with claims that appear to read on):

- A. Nanoparticles are transition metals (claims 1, 4-6, 15-16, 22-23, 35-36)
- B. Nanoparticles are a pigment (claims 1, 4-6, 15, 17, 35-36)
- C. Nanoparticles are nanoaggregates (claims 1, 4-6, 15, 18, 35-36)
- D. Nanoparticles are oxides (claims 1, 4-6, 15, 19, 35-36)
- E. Nanoparticles are nitrides (claims 1, 4-6, 15, 20, 35-36)

- F. Nanoparticles are carbide of Al, Si, or B (claims 1, 4-6, 15, 21, 35-36)
 - G. Nanoparticles are carbon (claims 1, 4-6, 15, 24, 35-36)
 - H. Nanoparticles are coated (claims 1, 4-6, 15, 25, 35-36)
 - I. Nanoparticles are grafted (claims 1, 4-6, 15, 26, 35-36)
4. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

The express "special technical features" is defined as meaning those technical features that define a contribution which each of the inventions, considered as a whole, makes over the prior art." (Rule 13.2). The question of unity of invention has been reconsidered retroactively by the examiner in view of the search performed; a review of **Peng** (CN 1,413,797 A - Full translation) in view of **Ishii** (US 5,916,635) makes clear that the claimed special technical feature is not non-obvious over the prior art.

Peng:

Peng discloses a method of soldering aluminum and copper pipes together using an active connection agent prepared from nanometer powder which was added to water, organic cellulose, and flux through mixing. Thus nanoparticles are added to a base material to produce a non-corrosion flux. Peng discloses a method of soldering aluminum and copper pipes together using an active connection agent prepared from nanometer powder which was added to water, organic cellulose, and flux through mixing. Thus nanoparticles are added to a base material to produce a non-corrosion flux.

Ishiii:

Ishii is drawn to producing hydrophilic coatings for the aluminum fins of heat exchangers (Abstract). Such hydrophilic coatings are used to let condensing water spread out over the surface of fins rather than forming globules which increase resistance to air flow and lower heat exchanger efficiency (col. 1, lines 20-35).

Hydrophilic coatings are produced by spreading a mixture of colloidal silica (Silicon dioxide, SiO₂), water-soluble polymers, and anionic surfactants over aluminum fins and drying by heating (col. 3, lines 1-10). The colloidal silica may be alkali-stabilized silica with a particle diameter of 5 to 100 nm, preferably 10 to 30 nm (col. 3, lines 19-25).

The total weight of the polymer and silica nanoparticles in the mixture is 4 to 20 wt% (col. 3, lines 9-10).

Regarding claim 1, it would have been obvious to one of ordinary skill in the metallurgy arts, at the time the invention was made, taking the disclosures of Peng and Ishii as a whole, to combine Peng in view of Ishii to include from 0.01 to 10 vol% of nanoparticles by weight as Ishii teaches that the total weight of polymer and nanoparticles should be in the range of 4 to 20 wt%, which the Examiner holds would overlap the claimed ranges of 0.01 to 10 vol% when converted to volume percent. MPEP 2144.05, para I states: "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists." Furthermore the nanoparticles are silica, which is an oxide of silicon and may also be

coated / grafted nanoparticles in the form of alkali-stabilized or acid-stabilized silica sol (col. 3, lines 19-25).

5. Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

6. Upon the allowance of a generic claim (claim 1), applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Conclusion

-- Claims 1, 5-6, and 15-38 are subject to an election of species requirement

X. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588 and fax number is (571) 270-4588. The examiner can normally be reached on Monday - Friday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark L. Shevin/

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

October 16th, 2008
10-562,154